



US00054A

United States Patent [19][11] Patent Number: **6,018,954**

Assaf

[45] Date of Patent: **Feb. 1, 2000****[54] HEAT PUMP SYSTEM AND METHOD FOR AIR-CONDITIONING**[76] Inventor: **Gad Assaf, 5 Kosover St., Rehovot 76408, Israel**[21] Appl. No.: **08/973,090**[22] PCT Filed: **Apr. 9, 1996**[86] PCT No.: **PCT/US96/04935**§ 371 Date: **Mar. 17, 1998**§ 102(e) Date: **Mar. 17, 1998**[87] PCT Pub. No.: **WO96/33378**PCT Pub. Date: **Oct. 24, 1996****[30] Foreign Application Priority Data**

Apr. 20, 1995 [IL] Israel 113446

[51] Int. CL⁷ **F25D 17/06**[52] U.S. Cl. **62/94; 62/332; 62/271; 62/305; 62/310**[58] Field of Search **62/91, 92, 93, 62/94, 332, 335, 271, 305, 310****[56] References Cited****U.S. PATENT DOCUMENTS**

2,672,024	3/1954	McGrath .	
2,798,570	7/1957	Kelley	62/94
2,952,993	9/1960	Bosworth	62/94
4,700,550	10/1987	Rhodes	62/271
4,941,324	7/1990	Peterson et al.	62/94

Primary Examiner—William Doerfler*Attorney, Agent, or Firm*—Bachman & LaPointe, P.C.**[57] ABSTRACT**

There is provided a heat pump system including two (4, 6), at least similar units in fluid communication with each other, each unit having a housing (8, 8'), a first air/brine heat exchanger (12, 12'), a second brine/refrigerant heat exchanger (24, 24'), a brine inlet (10, 10') for applying brine onto at least one of the heat exchangers, a brine reservoir (14, 14') and a pump (28) for circulating the brine from the reservoir to the inlet. The first and second heat exchangers are in closed loop fluid communication with each other and have a compressor (44) for circulating a refrigerant there-through in selected directions.

28 Claims, 3 Drawing Sheets